

## CLAIMS

What is claimed is:

1. A method of assembling permanent magnet blocks, comprising:
  - 5 restraining movement of a first permanent magnet block in at least one direction; mechanically restraining movement of the first permanent magnet block in the one direction;
  - 10 placing a second permanent magnet block in proximity of the first permanent magnet block, the second permanent magnet block having a magnetic orientation not in alignment with the magnetic orientation of the first permanent magnet block; restraining movement of a second permanent magnet block in at least one direction; and,
  - 15 2. The method of claim 1 wherein restraining movement of the first permanent magnet block in at least one direction comprises restraining movement of the first permanent magnet block in all but one direction using a nonmagnetic frame.
  3. The method of claim 2 wherein mechanically restraining movement of the first permanent magnet block in the one direction comprises mechanically restraining movement of the first permanent magnet with a deformation in the nonmagnetic frame.

4. The method of claim 1 wherein restraining movement of the first permanent magnet block and the second permanent magnet block each in the one direction comprises restraining movement of the first permanent magnet block and the second permanent magnet block in the same direction.
5. The method of claim 4 wherein the magnetic orientations of the first permanent magnet block and the second permanent magnet block differ by any angle.
- 10 6. The method of claim 5 wherein the magnetic orientations of the first permanent magnet block and the second permanent magnet block differ by an angle of 30 degrees.
- 15 7. The method of claim 1 wherein mechanically restraining movement of the first permanent magnet block and the second permanent magnet block comprises restraining movement of the first permanent magnet block and the second permanent magnet block with 3 axis ball screw driven linear slides.
- 20 8. The method of claim 2 wherein restraining the second permanent magnet block in all but one direction comprises restraining the second permanent magnet block with the nonmagnetic frame.

9. The method of claim 8 further comprising applying adhesive to at least one of the sides of the first permanent magnet block and the second permanent magnet block and adhering the first permanent magnet block and the second permanent magnet block to the frame.

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10. The method of claim 9 further comprising removing any mechanical restraint in the one direction, once the adhesive has set.

10 11. The method of claim 10 further comprising fracturing one of the magnet blocks while maintaining the position of the adjacent magnet block within the frame and removing the fractured magnet block from the frame.

12. A method of assembling two permanent magnet blocks into a single magnet assembly comprising:  
15 inserting a first permanent magnet block into a frame that prevents movement of the first permanent magnet block in all but one direction; preventing movement of the first permanent magnet block in the one direction once inserted;

inserting a second permanent magnet block into the frame that prevents movement of the second permanent magnet block in all but one direction that would occur due to the first and second permanent magnet block having different magnetic orientations.

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13. The method of claim 12 wherein preventing movement of the first permanent magnet block in the one direction comprises preventing movement of the first permanent magnet block in the one direction by a means other than the frame.

10 14. The method of claim 12 wherein preventing movement of the first permanent magnet block in the one direction comprises mechanically preventing movement of the first permanent magnet block in the one direction.

15. The method of claim 12 wherein preventing movement of the first permanent magnet block in the one direction comprises preventing movement of the first permanent magnet block in the one direction by adhesive process.

16. The method of claim 12 wherein preventing movement of the first permanent magnet block in the one direction comprises preventing movement of the first permanent magnet block in the one direction by a deformation of the frame.

17. The method of claim 16 wherein the deformation of the frame operates as a  
spring.

5 18. The method of claim 12 further comprising preventing movement of the second  
permanent magnet block in the one direction, once inserted.

19. The method of claim 18 further comprising applying adhesive to at least one of  
the sides of the first permanent magnet block and the second permanent magnet block  
10 and adhering the first permanent magnet block to the second permanent magnet block to  
the frame.

20. The method of claim 19 further comprising removing any non adhesive restraint  
from the first permanent magnet block and the second permanent magnet block once the  
15 adhesive has set.

21. The method of claim 20 further comprising fracturing one of the magnet blocks  
and removing the fractured pieces of the magnet block from the frame without damaging  
the other magnet block.

22. A method comprising:

placing a first permanent magnet block in a frame, the first permanent magnet block having a magnetic orientation aligned with the frame; and

5 placing adjacent the first permanent magnet block a second permanent magnet block in the frame, the second permanent magnet block having a magnetic orientation offset from the magnetic orientation of the first permanent magnet block..

10 23. The method of claim 22 further comprising placing an additional permanent magnet block in the frame, the additional permanent magnet block oriented 30 degrees from an adjacent permanent magnet block in the frame.

15 24. The method of claim 23 further comprising placing additional permanent magnet blocks into the frame such that a last permanent magnet block has a magnetic orientation 30 degrees from the first permanent magnet block, creating a magnetic circuit.

25. The method of claim 24 wherein additional permanent magnet blocks can be added that repeat the magnetic orientation of at least one adjacent permanent magnet block.

20 26. An apparatus, comprising:

a plurality of magnets, each magnet having the same shape and one of two magnetic orientations, each of the plurality of magnets having one of the two magnetic orientations assembled in one of eight orientations of the magnets, and each of the plurality of magnets having the second of the two magnetic orientations assembled in one of four orientations of the magnets, to form a magnetic circuit.

5        27. The apparatus of claim 26, wherein the magnet shape comprises one of a square, triangle, hexagon and octagon.

10      28. The apparatus of claim 27, wherein the first magnetic orientation is perpendicular to the face of the magnet, and wherein the second magnetic orientation is at an acute angle to the face of the magnet.

29. The apparatus of claim 28, wherein the acute angle is 15 degrees.

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30. The apparatus of claim 28, wherein the acute angle is 30 degrees.